

Congenital malformations in practice: beyond the embryological picture.

Pieter Cornillie

Department of Morphology, Faculty of Veterinary Medicine, Ghent University, Salisburylaan 133, 9820 Merelbeke, Belgium.

The embryonic development in the early phases of the prenatal life is a marvelous but intriguingly sophisticated process. The complexity of these initial steps at the ontogenic dawn of an organism is clearly illustrated by the rather frequent occurrence of congenital malformations, which, on average, amount up to more than 3% of all living births in cattle. If not directly lethal, many of these anomalies seriously affect the life quality of the animal, so no other option than euthanasia can be considered.

Despite the frequent occurrence of these congenital anomalies and associated economic losses they impose, in many cases, the causative agent and underlying teratogenesis remain obscure.

Nevertheless, whereas science fails to provide an immediate and complete answer, a farmer confronted with a malformed calf in his herd won't hesitate to consult his veterinarian, expecting to obtain a clear explanation on the whys and wherefores this could happen, and how it can be prevented in the future.

In this final lecture, an overview will be given of the commonly occurring and newly emerging bovine congenital anomalies that were presented by Flemish veterinary practitioners to the Department of Morphology of the Ghent University for examination. By offering this service to the practitioners, we try to support them in providing an adequate answer to the farmer, at least by correctly describing the anomalies based on gross anatomical and histological examination, naming and classifying the anomaly correctly, identifying the exact embryonic step during which the mishap took place, and offer some little more background based on literature reports. Furthermore, this link between practitioners, clinicians and scientists is the first vital step in the research that needs to be undertaken to further elucidate the full etiological and teratological backgrounds of these malformations. Due to the intense collaboration with vets in the field, we were able to monitor from the first row the emergence and spread of new anomalies in different cattle breeds. By gathering all cases in one single institute, similarities between several individual cases could more easily be spotted, which offered a good starting point for the comparison and further investigation of these malformations. Thanks to this approach, some of these congenital malformations could be fully characterized including the determination of their etiological cause, and even the erasure of an entire cattle breed, belonging to our living cultural heritage and threatened by a lethal hereditary malformation, could be avoided.